EXHIBIT 8

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Get the Processor Speed in two simple ways

By Thomas Latuske

Get the frequency of the processor either from the registry, or calculate it.

C++ (VC6)
Windows (NT4, WinXP)
Win32, VS, MFC
Dev
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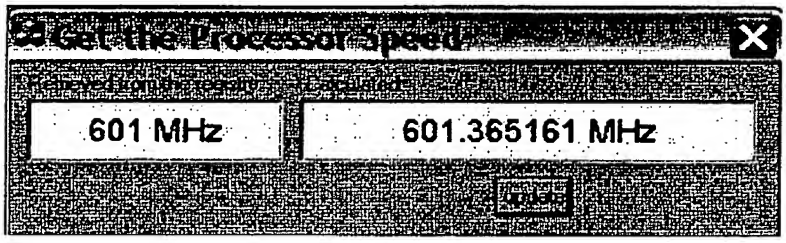

Introduction

I'll show you two ways to retrieve the processor-speed (**frequency in MHz**). W
simple functions, one to retrieve the frequency from the registry of your Windo
operating system, and one to calculate it with the clock cycles and a high resol
counter. If you want to use the function to calculate the speed (**frequency**), yc
to use it with a Pentium instruction set compatible processor (look at the lines t

rfmobile wrote in a message:

> *You don't need to change the RDTSC definition for non-Intel processors. The code works as-is on my AMD mobile Athlon. Should work on any Pentium instruction set compatible processor but not for 486 or 386.*

I'm not able to verify this, so I would like to hear some feedback.

BTW: **Constructive** criticism is always welcome! :-)

Routine to retrieve the speed (frequency) from the reg

This is plain code to retrieve a registry value as a `CString`:

```
CString ProcSpeedRead()
{
CString sMHz;
char Buffer[_MAX_PATH];
DWORD BufSize = _MAX_PATH;
DWORD dwMHz = _MAX_PATH;
HKEY hKey;

// open the key where the proc speed is hidden:
long lError = RegOpenKeyEx(HKEY_LOCAL_MACHINE,
                           "HARDWARE\\DESCRIPTION\\System\\CentralProcessor\
                           0,
                           KEY_READ,
                           &hKey);

    if(lError != ERROR_SUCCESS)
      {// if the key is not found, tell the user why:
           FormatMessage(FORMAT_MESSAGE_FROM_SYSTEM,
                           NULL,
                           lError,
                           0,
                           Buffer,
                           _MAX_PATH,
                           0);
               AfxMessageBox(Buffer);
           return "N/A";
       }

        // query the key:
        RegQueryValueEx(hKey, "~MHz", NULL, NULL, (LPBYTE) &dwMHz, &BufSi

    // convert the DWORD to a CString:
    sMHz.Format("%i", dwMHz);

return sMHz;
}
```

Routine to calculate the processor frequency in MHz:

Retrieve the frequency in MHz as a `floating-point` number. I use some well documented (at least for me ;-)) assembler here:

```
float CGetTheProcessorSpeedDlg::ProcSpeedCalc()
{
/*
RdTSC:
It's the Pentium instruction "ReaD Time Stamp Counter". It measures the
number of clock cycles that have passed since the processor was reset, as
64-bit number. That's what the <CODE>_emit lines do.*/
#define RdTSC __asm _emit 0x0f __asm _emit 0x31

// variables for the clock-cycles:
__int64 cyclesStart = 0, cyclesStop = 0;
// variables for the High-Res Preformance Counter:
unsigned __int64 nCtr = 0, nFreq = 0, nCtrStop = 0;
```

```
// retrieve performance-counter frequency per second:
if(!QueryPerformanceFrequency((LARGE_INTEGER *) &nFreq)) return 0;

// retrieve the current value of the performance counter:
QueryPerformanceCounter((LARGE_INTEGER *) &nCtrStop);

// add the frequency to the counter-value:
nCtrStop += nFreq;


_asm
    {// retrieve the clock-cycles for the start value:
        RdTSC
        mov DWORD PTR cyclesStart, eax
        mov DWORD PTR [cyclesStart + 4], edx
    }

    do{
    // retrieve the value of the performance counter
    // until 1 sec has gone by:
        QueryPerformanceCounter((LARGE_INTEGER *) &nCtr);
      }while (nCtr < nCtrStop);

_asm
    {// retrieve again the clock-cycles after 1 sec. has gone by:
        RdTSC
        mov DWORD PTR cyclesStop, eax
        mov DWORD PTR [cyclesStop + 4], edx
    }

// stop-start is speed in Hz divided by 1,000,000 is speed in MHz
return    ((float)cyclesStop-(float)cyclesStart) / 1000000;
}
```

Credits

- I got the assembler some time ago from an assembler newsgroup
- ...and credits to all programmers out there who share their knowing!

About Thomas Latuske

My name is Thomas, I'm born on January the 11th in 1970, right now I'm working in the Quality department of a big Pipe mill as a Technician.
My hobbies are my girl friend, my car, RC-Planes and Computers. I begun with VC++ some time ago and now Programming is like a drug to me (I'm still a beginner). I want to learn it all in a blink of an eye but i know that this is not possible. It's real fun for me and I do small Programms for my own use.
O.K. enough written..... I need my Time to debug everything that crosses my way!

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